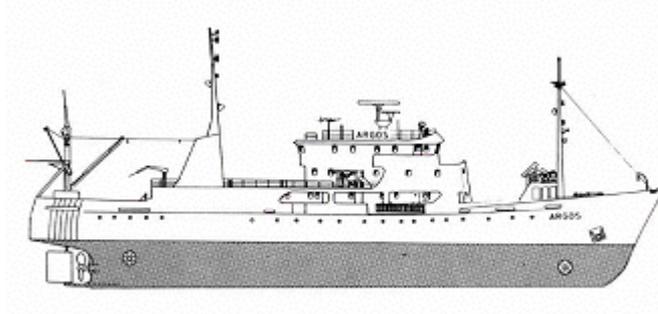


CRUISE REPORT FROM R/V ARGOS



Survey period: 2007-11-12 - 2007-11-17

Survey area: The Skagerrak, the Kattegat, the Sound and the Baltic Proper.

Principal: SMHI

SUMMARY

The expedition was part of SMHI's regular marine monitoring programme and covered the Skagerrak, the Kattegat, the Sound and the Baltic Proper.

At visited stations in Kattegatt, Skagerrak and the Sound nutrient concentrations showed normal or near normal values for the season. The phosphorus concentration was still elevated in the southern Baltic Proper. Silicate and inorganic nitrogen compounds were normal throughout the investigation area.

Oxygen values below 2 ml/l were found at all stations in western, eastern and northern Baltic Proper with bottom depth greater than 70 to 80 metres. Hydrogen sulphide was found from 70 to 80 metres and deeper in southern Baltic Proper, from 130 to 150 metres and deeper in eastern Baltic Proper and finally from 70 to 90 metres and deeper in northern Baltic Proper.

The next expedition is scheduled for December 3rd to 14th, 2007.

Data presented in this report have been subject to preliminary quality control procedures only

PRELIMINARY RESULTS

The cruise, part of SMHI's ordinary monitoring programme, began in Göteborg on November 12th and ended in Kalmar on November 17th.

At 24 visited stations full hydrography sampling was performed. CTD-sampling was made at 3 stations. Reference sampling was made at SMHI:s oceanographical buoy system (**Läsö E**).

During the first part of the week a northerly strong breeze prevailed, followed by a moderate gale in southern Baltic. The latter part of the week the winds weakened and turned west. The air temperature varied from 1°C to 5°C.

Air temperature during the week was varying between 1.0°C and 5.9°C. Air pressure varied between 1003 hPa and 1018 hPa.

The only precipitation during the week was a short shower of rain in the south-western Baltic Proper during Tuesday.

The Skagerrak

The sea surface temperature at visited stations in Skagerrak were normal or slightly lower than normal for the season, lowest measured temperature was 7.9 °C and highest temperature was 9.6 °C.

Sea surface salinities were at the normal or just over the normal. The lowest value measured was at **Släggö** and was found to be 25.6 psu. The highest value, 32.5 psu was found at **Å13**.

All nutrients from the surface layer, analyzed from stations just outside the Swedish coast (**P2 and Släggö**), were normal for the season. Offshore stations in central parts of Skagerrak (**Å13-Å17**) showed values decreased compared to normal

At the coastal area stations (**P2 and Släggö**) phosphate concentrations near surface were 0.3 µmol/l and 0.4 µmol/l respectively. At stations in the central parts of Skagerraks lowest value was found to be 0.1 µmol/l (**Å13**) and the highest value 0.2 µmol/l (**Å15**).

Near surface Σ nitrite+nitrate concentrations at the coastal stations (**P2 and Släggö**) were 1.6 µmol/l and 4.3 µmol/l, respectively. Sampling from central parts of Skagerrak stations gives a lowest value of 0.2 µmol/l (**Å15**) and a highest value of 0.8 µmol/l (**Å13**).

Silicate levels at coastal **P2** was found to be 2.7 µmol/l and at **Släggö** silicate level were 8.7 µmol/l. Samplings analyzed from the remainder of Skagerrak stations showed silicate concentrations varying between 1.1 µmol/l (**Å17**) to 1.6 µmol/l (**Å13**).

The low oxygen levels seen at previous expeditions at **Släggö** and **P2** were back to normal values, 4.8 ml/l and 5.4 ml/l, respectively.

Secchi depth at P2 was 6 m.

The Kattegatt the Sound

Sea surface temperature at visited stations in Kattegatt was normal for the season, the lowest recorded value was 6.9°C (**Anholt E**) and the highest value was 9.0°C (**Läsö E**). In the Sound (**W Landskrona**) sea surface temperature was normal for season, 8.3°C. At **Drogden E** the temperature was found to be 7.9°C in the surface water

Sea surface salinities at the Kattegatt stations were normal or slightly enhanced compared to normal (**N14**). The lowest value was 19.7 psu at **Anholt E** and the highest was 30.2 psu (**Läsö E**). In the Sound (**W Landskrona** and **Drogden E**) the values were 20.9 psu and 9.6 psu respectively.

In Kattegatt a weak thermocline was found between 20 and 40 metres. In the Sound (**W Landskrona**) a distinct thermocline was found at 30 metres. In Kattegatt and in the Sound (**W Landskrona**) the halocline was situated between 10 and 20 metres.

At **Drogden E** a thin bottom layer with higher salinity was observed, indicating a beginning or a just ended inflow from Kattegatt to the Baltic Sea.

All analyzed nutrients taken from the surface layer in Kattegatt and in the Sound indicated levels near the normal for the season.

Lowest concentration of phosphorus in the Kattegatt surface waters was 0.2 µmol/l (**Anholt E**). Highest analyzed value was 0.3 µmol/l (**Fladen** and **N14**). At **W Landskrona** phosphorus concentration in the surface water was 0.4 µmol/l.

Near surface Σ nitrite+nitrate concentrations showed a lowest value of 0.15 µmol/l (**Anholt E**) and a highest value of 1.6 µmol/l (**Å15**). In the Sound (**W Landskrona**) analyzes showed a value of 6.9 µmol/l.

Finally, silicate levels at visited stations in Kattegatt varied between 3.9 µmol/l (**Fladen**) and 4.5 µmol/l (**N14**). At **W Landskrona** silicate level was found to be 1.0 µmol/l

All the measured oxygen values in Kattegatt were above 2 ml/l. As well as in previous expeditions, low oxygen values (1.9 ml/l) were observed in the deep waters of the Sound (**W Landskrona**). The concentration is equal to an oxygen saturation of 30 %.

Secchi depth in Kattegatt varied between 5 and 7 metres.

The Baltic Proper

At visited stations in Baltic Proper, sea surface temperature was normal for the season. Lowest recorded value was 7.1°C (**BY38**) and highest value was 9.3°C (**BY1** och **BCSIII-10**).

Salinity measured in the surface water was normal at all visited stations in Baltic Proper.

A thermocline between 60 and 70 metres was seen at stations **Hanöbukten** och **BY4**, in the southern Baltic Proper. In Arkona basin the halocline was found between 30 and 35 metres, in the remainder of the Baltic Proper it was found between 60 and 70 metres.

The phosphorus concentration was still elevated (0.5 - 0.6 µmol/l) in the Arkona and Bornholm basins (**BY1 – BY5**). Rest of the stations in the Baltic Proper showed normal levels. The other nutrients analyzed showed normal values throughout the whole area.

Phosphorus concentration in near surface waters in Baltic Proper showed values between 0.2 µmol/l (**BY10, BY15, BY20** och **BY31**) and 0.6 µmol/l (**BY1 – BY5, REFM1V1**).

The lowest near surface Σ nitrite+nitrate concentrations found in the Baltic Proper was 0.3 µmol/l (**BY38**). The highest value found was 1.5 µmol/l (**BCSIII-10**).

Silicate concentration at the near shore station **REFM1V1** was found to be 14.4 µmol/l. Sea surface samples analyzed for Σ nitrite+nitrate concentrations from all other visited stations in the Baltic Proper showed values ranging from 2.5 µmol/l (**BY15**) to 10.7 µmol/l (**BY2** and **BY32**).

A higher value of hydrogen sulphide was found at visited stations in western Baltic Proper. A oxygen value below normal (0.5 ml/l) was found at **BCSIII-10**, in southeastern Baltic Proper. Finally, elevated oxygen values were recorded near bottom at **BY2**.

Oxygen values below 2 ml/l were found at all stations in western, eastern and northern Baltic Proper with bottom depth greater than 70 to 80 metres. Hydrogen sulphide was found from 70 to 80 metres and deeper in southern Baltic Proper (**BY4, BY5** och **Hanöbukten**), from 130 to 150 metres and deeper in eastern Baltic Proper and finally from 70 to 90 metres and deeper in northern Baltic Proper.

The Secchi depth was between 7 and 8 metres.

PARTICIPANTS

Arne	Svensson	Chief scientist	SMHI Oceanographic lab
Kristin	Andreasson		-”-
Johan	Håkansson		-”-
Sari	Sipilä		-”-
Anna-Kerstin	Thell		-”-
Bodil	Thorstensson		-”-

APPENDICES

- Track chart
- Table over stations, parameters and sampling depths
- Map showing bottom oxygen concentrations
- Profiles for selected stations



Click on the button to open appendices.
Note that this will only work when
connected to Internet!